REMARKS

As a preliminary matter, Applicants acknowledge and appreciate the Examiner's statement that claims 4-9, 13-14, 15-16, and 26-33 would be allowable if rewritten in independent form. At this time, Applicants elect to keep these claims in dependent form pending the Examiner's response to the remarks submitted herewith.

Claims 35-38 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Schildmeyer. Claims 37 and 38 have been amended to be rewritten in independent form. Claims 35 and 36 have been cancelled, without prejudice. Applicants respectfully traverse the rejection of claims 37 and 38.

As to claim 37, Applicants submit that Schildmeyer neither teaches nor suggests at least that a heated inlet port and heated exit port are thermally conductive and that a detection cell is thermally nonconductive. The Office Action cites parts 90 and 92, as well as col. 4, lines 10-27 for this feature. However, nothing in the cited section or FIG. 8 (showing parts 90 and 92) appears to teach or suggest this feature.

As to claim 38, Applicants submit that Schildmeyer neither teaches nor suggests at least that a heated inlet port and a heated exit port and thermally isolated from a detection cell. The Office Action cites part 36 for an inlet port, and part 40 for an outlet port meeting this feature. However, parts 36 and 40 cannot be the inlet port and outlet port of claim 38 because they do not extend into the detection cell (see FIG. 1 of Schildmeyer), as defined in the claim. Accordingly, Applicants request reconsideration and allowance of claims 37 and 38.

Claims 1-2, 10-12, and 23-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cerni in view of Ostwald. Applicants respectfully traverse the rejection for at least the reason that there appears to be no motivation to modify the light trap of Cerni to provide the absorptive filter of Ostwald, let alone the light trap defined in claim 1.

The particle detector disclosed in Cerni differs from the claimed light scattering detector device at least in that it lacks a light trap that accepts a polarized beam after it passes through a detection cell, and lacks a light trap that includes an elongated housing and an absorptive filter as claimed. An artisan would not be motivated to modify Cerni's detector to include such a light trap.

Cerni's detector is an intracavity device; i.e., light scattering occurs by particles inside the laser cavity per se. As shown in FIG. 4 of Cerni, a laser beam is established in a cavity, between a solid state laser medium 403 and a laser beam reflector mirror 405. The laser beam does not leave the cavity in the Cerni device.

Thus, a light trap such as that defined in claim 1, or such as that disclosed in Ostwald, cannot be used for at least two reasons. One reason is that it would kill the laser. Another reason is that the light inside the cavity in Cerni is not polarized. In fact, the word "polarized" is never used in Cerni.

Particularly, in Cerni, particles within the cavity (at 113) scatter light, which is collected by optics 110 and focused on detector 410. The axis for light detection (not shown) is normal to the axis of the laser. For good sensitivity, it is important that spurious (stray) light be kept away from the detector 410. In Cerni, various processes, including light

scattering by eddy currents, produce diffuse light that is not coincident with the laser beam axis and can therefore reach detector 410. The purpose of the series of apertures 105 is to block this stray light. The apertures 105 have no effect on the laser beam per se.

Aperture blocks 105 in Cerni are sometimes referred to as a "light trap" (e.g., Cerni, col. 7, line 54), but they in reality an aperture assembly 105 (and correctly described as such, col. 7, line 36). The Brewster angle absorptive filter defined in claim 1 is very different from an aperture assembly. In fact, in preferred embodiments of a light scattering detector device as described in the present application, both an aperture assembly and a light trap are used.

For example, a preferred light scattering detector configuration places the particle scattering region outside the laser per se; i.e., it is an "extracavity" device (e.g., see FIG. 4). The laser beam 402 in preferred embodiments is primarily well-collimated and highly polarized. However, there is also a diffuse weak glow around the primary beam. The preferred light scattering detector uses an aperture assembly 403 to block this glow so that it will not reach the detector 410. These apertures operate in a manner similar to the aperture assembly 105 used by Cerni.

The strong laser beam in preferred embodiments must not be allowed to reach the detector 410, and it must not be allowed to escape the light scattering device detection chamber 404. Thus, the Brewster angle light trap 405 is introduced. The light trap (an example of which is shown in FIG. 3) is extremely effective in preferred embodiments because it deals with well-collimated and highly polarized radiation (as described in the

present specification). However, the Brewster angle light trap is not effective with diffuse radiation (omnidirection with random polarization) and therefore could not be used with Cerni's device.

Accordingly, an artisan would not be motivated to incorporate either the light trap defined in claim 1 or the light trap used in Ostwald into the device in Cerni, let alone to replace or modify the aperture assembly 105 described in Cerni. Thus, an artisan would not find the light scattering device of claim 1 obvious in view of Cerni and Ostwald.

Further, the light trap of Ostwald, in contrast to the aperture assembly 105 ("light trap") in Cerni, is designed to allow no light to be scattered back out of it (see abstract). This is done in Ostwald by providing a plurality of absorption filters 5, 7, 9, 11 in a polygonal housing. Because the light traps of Cerni and Ostwald are directed to two different purposes, an artisan would not find it obvious to add such absorptive filters into the aperture assemblies in Cerni. Additionally, there is no suggestion provided in either reference as to how to combine the aperture assembly of Cerni to provide a plurality of absorption filters arranged in a polygonal shape.

For at least these reasons, Applicants respectfully submit that claim 1 and dependent claims 2, 10-12, and 23-24 are allowable over the references of record, including Cerni and Ostwald. Applicants thus request reconsideration and withdrawal of the rejection.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cerni in view of Ostwald, and further in view of Musha. Claims 17-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cerni in view of Ostwald, and further in view

of Schildmeyer. Claims 21-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cerni in view of Ostwald, and further in view of Wyatt. Applicants respectfully traverse these rejections for at least the reasons stated above regarding independent claim 1.

Claims 25 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over FIG. 1 of the present application in view of Cerni. Claim 34 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over FIG. 1 of the present application in view of Cerni, and further in view of Schildmeyer.

Additionally, regarding claims 25 and 34, the Office Action cites part 405 of Cerni for the claimed spherical mirror. However, the purpose of the mirror 405 used in Cerni is to sustain the laser action within the cavity. By contrast, in the invention defined in claim 25, the purpose of the mirror (e.g., part 412 in the present specification) is to direct light 411 scattered by the particles 406 back toward the detector 410. The mirror effectively increases the solid angle of light seen by the detector.

For at least the foregoing reasons, Applicants believe that this case is in condition for allowance, which is respectfully requested. The Examiner should call Applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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